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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.    | CONFIRMATION NO. |
|--|-------------|----------------------|------------------------|------------------|
| 10/700,124   | 11/03/2003  | Timothy V. Frahm     | 7241                   | 3698             |
| 7590<br>Zenith Electronics Corporation<br>2000 Millbrook Drive<br>Lincolnshire, IL 60069 |             |                      | EXAMINER<br>LEE, SIU M |                  |
|  |             |                      | ART UNIT<br>2611       | PAPER NUMBER     |
| SHORTENED STATUTORY PERIOD OF RESPONSE   |             | MAIL DATE            | DELIVERY MODE          |                  |
| 3 MONTHS   |             | 04/17/2007           | PAPER                  |                  |

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

|                              |                        |                     |
|------------------------------|------------------------|---------------------|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |
|                              | 10/700,124             | FRAHM ET AL.        |
|                              | <b>Examiner</b>        | <b>Art Unit</b>     |
|                              | Siu M. Lee             | 2611                |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 03 November 2003.  
 2a) This action is **FINAL**.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-24 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) 11-14, 19-24 is/are allowed.  
 6) Claim(s) 1,5,6,10 and 15-18 is/are rejected.  
 7) Claim(s) 2-4 and 7-9 is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 03 November 2003 is/are: a) accepted or b) objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____.   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Claim Objections***

1. Claims 1, 6, 15 are objected to because of the following informalities:

- (1) Regarding claim 1:

Claim 1, page 29, line 13, change "the tuned signal" to ---a tuned signal---; no antecedent basis for the tuned signal.

- (2) Regarding claim 6:

Claim 6, page 31, line 8-9, change "the tuned signal" to ---a tuned signal---; no antecedent basis for the tuned signal.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 15-18 recite the limitation "the calibration tap values" in page 35, claim 15, lines 2-3. There is insufficient antecedent basis for this limitation in the claim.

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 6 and 10 are rejected under 35 U.S.C. 102(e) as being anticipated by Seo et al. (US 2004/0008764 A1).

(1) Regarding claim 6:

Seo et al. discloses a method of calibrating a receiver (reception module 300 and pre-equalization module 100 in figure 2) of a DTV translator having the receiver (reception module 300 and pre-equalization module 100 in figure 2) and a transmitter (transmission module 200 in figure 2), the method comprising:

coupling an output of the transmitter to the receiver (the switch 240 in figure 2 select either the input or the output signal of the channel filter 230 and sends the selected signal to the reception module 300, paragraph 0045, lines 1-5);

tuning the receiver to the output of the transmitter (the VSB demodulator 310 demodulate the baseband signal from the RF frequency down-converter 320 and send it to the second memory 130 of the pre-equalization module 100, paragraph 0046, lines 1-7); and,

calibrating the receiver in response to the tuned signal (the pre-equalization module 100 performs equalization to compensate for signal transmission distortion, paragraph 0050, lines 1-4).

(2) Regarding claim 10:

Seo et al. further discloses the method comprising using the receiver for verifying performance of the DTV translator (in the pre-equalization module 100, the first adder 126 in figure 3 calculate an error value  $E_k$  as the difference between the transmit signal  $V_k$  from the first memory 110 and the demodulated signal  $V_k'$  from the secondary memory which is received from the transmission module and the reception module, paragraph 0041, lines 3-6).

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seo et al. (US 2004/0008764 A1) in view of Twitchell et al (US 6,335,767 B1).

(1) Regarding claim 1:

Seo et al. discloses a method of pre-correcting (pre-equalizing) a DTV translator (the VSB transmitter as shown in figure 2) having a receiver (reception module 300 and pre-equalization module 100 in figure 2) and a transmitter (transmission module 200 in figure 2), the method comprising:

coupling an output of the emission mask filter (channel filter 230 in figure 2) to the receiver (the switch 240 in figure 2 select either the input or the output signal of the

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channel filter 230 and sends the selected signal to the reception module 300, paragraph 0045, lines 1-5);

tuning the receiver to the output of the emission mask filter (channel filter 230 in figure 2) (the VSB demodulator 310 demodulate the baseband signal from the RF frequency down-converter 320 and send it to the second memory 130 of the pre-equalization module 100, paragraph 0046, lines 1-7); and

pre-correcting the DTV translator in response to the tuned signal (the pre-equalization module 100 performs equalization to compensate for signal transmission distortion, paragraph 0050, lines 1-4).

Seo et al. fails to disclose the transmitter (transmission module) comprises a high power amplifier.

However, Twitchell et al. discloses a transmitter comprising a high power amplifier and a high power filter (power amplifier 20 and filter 24 in figure 5, column 5, lines 47-60).

It is desirable for the transmitter to comprise a high power amplifier and a filter because it increases the broadcasting ranging of the transmitted signal. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to employ the teaching of Twitchell et al. in the method of Seo et al. to increase the efficiency of the transmitter.

(2) Regarding claim 5:

Seo et al. further discloses the method comprising using the receiver for verifying performance of the DTV translator (in the pre-equalization module 100, the first adder

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126 in figure 3 calculate an error value  $E_k$  as the difference between the transmit signal  $V_k$  from the first memory 110 and the demodulated signal  $V_k'$  from the secondary memory which is received from the transmission module and the reception module, paragraph 0041, lines 3-6).

### ***Allowable Subject Matter***

8. Claims 11-14, 19-24 allowed.
9. Claims 2-4, 7-9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
10. Claims 15-18 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

### ***Conclusion***

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Lee (US 6,917,389 B2) discloses a linearization compensation system of digital TV relay apparatus and method thereof. Leva et al. discloses an adaptive digital pre-correction of nonlinearities introduced by power amplifiers. Jeong (US 6,515,712 B1) discloses a signal distortion compensating apparatus and method in digital TV translator. Danielsons (US 6,751,266 B1) discloses a RF transmitter employing linear and non-linear pre-correctors.

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12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Siu M. Lee whose telephone number is (571) 270-1083. The examiner can normally be reached on Mon-Fri, 7:30-4:00 with every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh Fan can be reached on (571) 272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Siu M. Lee  
4/3/2007

  
CHIEH M. FAN  
SUPERVISORY PATENT EXAMINER